

L 58913-65

ACCESSION NR: AT5007938

blems of the OIYaI jointly with the NIIIEFA GKAE SSSR and other scientific research institutes with rated current proton beam up to 500 microamperes. The choice of energy was made on the basis of the fact that at 700 Mev the cross-sections for formation of pions in nucleon-nucleon and nucleon-nuclei collisions are close to maximum, and also because of the possibility of utilizing the electromagnet of the 680-Mev synchrocyclotron of the OIYaI for the new accelerator. The following new problems were considered in the design because there is now no similar operational high-energy accelerator: (a) verification of the linear theory and development of the nonlinear theory of spatial stability and of the phase motion of particles in the accelerator; (b) creation in a large space of a magnetic field with complex configuration and its stabilization with an unusually high degree of accuracy; (c) production of apparatus for the measurement of strongly nonhomogeneous magnetic fields (gradients up to 4000 oer/cm) with an accuracy better than  $10^4$ ; (d) production of high-frequency oscillators with power up to 2 MW at a frequency of 12 megacycles per second (12 Mc), with frequency stability of the order of  $10^{-5}$ , which operate with a resonance system with amplitude of the accelerating high-frequency voltage of up to 100 kilovolts; (e) design of an accelerator and its auxiliary systems which ensure effective operation and maintenance under conditions of high levels of activity; (f) development of a highly effective system for the channeling of proton beams from the accelerator, and also solution of the problems connected with

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producing beams of secondary particles and their channeling and focusing; (g) development of plans for the protection of personnel and instruments from radiation. The paper concludes that the relativistic cyclotron offers wide new possibilities for nuclear research in radiobiology, solid state physics, etc. Orig. art. has: 7 figures, 3 tables.

ASSOCIATION: (I) Ob'yedinennyy institut yadernykh issledovaniy, Dubna (Joint Institute of Nuclear Research, Dubna); (II) Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Equipment, GKAE SSSR)

SUBMITTED: 26 May 64

ENCL: 00

SUB CODE: NP

NO REF SOV: 009

OTHER: 002

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L 43080-65 EWT(m)/ EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(c) JT/GS 18  
 ACCESSION NR: AT5007918 S/0000/64/000/000/0197/0201 58-54

AUTHOR: Vladimirskiy, V. V.; Gol'din, L. L.; Koshkarev, D. G.; Tarasov, Ye. K.;  
 Yakovlev, B. M.; Gustov, G. K.; Komar, Ye. G.; Kulikov, V. V.; Malyshev, I. F.;  
 Monoszon, N. A.; Popkovich, A. V.; Stolov, A. M.; Strel'tsov, N. S.; Titov, V. A.;  
 Vodop'yanov, F. A.; Kuz'min, A. A.; Kuz'min, V. F.; Mintz, A. L.; Rubchinskiy,  
 S. M.; Uvarov, V. A.; Zhadanov, V. M.; Filaretov, S. G.; Shirvayev, F. Z.

TITLE: 60-70 Gev Proton Synchrotron 19

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy.  
 Moscow, Atomizdat, 1964, 197-201

TOPIC TAGS: high energy accelerator, synchrotron

ABSTRACT: A 60-70 Gev proton synchrotron with strong focusing is being constructed  
 not far from Serpukhov, as has been reported earlier (e.g. "Research Institute for  
 Electro-Physical Equipment, Leningrad," in Proceedings of the International Confer-  
 ence on High Energy Accelerators and Instrumentation (CERN, 1959), p. 373). The  
 present report describes parameter changes and improvements in precision structural  
 characteristics of the accelerator, and the present state of construction in mid-  
 1963. The parameters of the magnet are presented in a table. A small change in  
 the original plans permitted an increase in the length of a part of the free  
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sections, some of which are utilized for input and exit of beams. The super-period design is described. The lengthened sections were obtained as a consequence of shortening the focusing and defocusing blocks by 112 cm. The focusing properties of the magnetic channel were diminished consequently, but very little; and the limiting energy was lowered by 2-3 Gev. The construction of the magnet is described. Each of the magnetic blocks is divided lengthwise into 5 sub-blocks which are enveloped by the common winding. These sub-blocks consist of laminar two-millimeter silicon steel. These steel sheets were stamped out without subsequent mechanical working, and were subjected to sorting and intermixing in order to smooth out their magnetic characteristics. The sub-blocks are constricted by lateral welded plates without adhesion. Provision was made for windings on the poles in order to correct for pole nonlinearity and for variations in the drop reading. These windings make it possible to introduce artificial quadratic (square) nonlinearity that changes the dependence of the frequency of transverse oscillations during a pulse. In order to correct for straying of the residual field, provision has been made for windings on the yoke in series with the main winding. The sub-blocks must undergo calibration on a magnet stand in order to make correcting systems more precise and to determine the most convenient disposition of the sub-blocks along the ring. The winding of the electromagnet is made of aluminum busbars with hollow cores for cooling water. The length of the busbar is so selected that there would be no

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welded joints inside the coils. The winding consists of 4 sections, two of which are disposed on the upper pole and two on the lower. The most important characteristics of the electromagnet and power supply system are described in a table. Also described are the vacuum chamber and accelerating field (obtained by 53 paired resonators with ferrite rings, which operate at the 30-th harmonic of revolution and give accelerating potential of 350 kilovolts). The ring tunnel and the general arrangement of the accelerator are shown in figures and described. The building for the injector and portions of the ring tunnel from the injector to the experimental room have been completed in the main and are ready for installation of equipment. This room, in the form of a single-aisle building without internal supports, permits one to work on beams brought into the inner and outer sides. A 90-meter arch covers this room, whose overall length is 150 meters. Provisions have been made for a second experimental room at the southwest part of the ring. Orig. has 4 figures, 2 tables.

ASSOCIATION: Institute teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR). (2) Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Apparatus, GKAE SSSR).

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(3) Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute, Academy of Sciences SSSR). (4) Gosudarstvennyy proyektnyy institut GKAE SSSR (State Planning Institute, GKAE SSSR).

SUBMITTED: 26May64

ENCL: 00

SUB CODE: EE, NP

NO REF SOV: 002

OTHER: 001

am  
Card 4/4

POPKOVICH, A. V., KOMAR, E. G., MALYSHEV, I. F., MIKHELIS, Ya. L.

"Vacuum Chamber of the 10 GeV Synchrotron Electromagnet,"  
paper presented at CERN Symposium, 1956, appearing in Nuclear  
Instruments, No. 1, pp. 21-30, 1957

LC7HC

S/120/62/000/004/006/047  
E039/E420

246730  
AUTHORS:

Malyshev, I.F., Popkovich, A.V., Roshal', G.Ya.,  
Zheleznikov, F.G., Lysov, A.V., Tsepakin, S.G.,  
Solnyshkov, A.I., Boytsov, A.S., Astakhov, Ye.Ya.,  
Mironov, B.V., Lapitskiy, Yu.Ya., Batalin, V.A.,  
Khoroshkov, V.S.

TITLE:

The electrostatic accelerator - Injector of the proton  
synchrotron

PERIODICAL: Pribery i tekhnika eksperimenta, no.4, 1962, 37-45

TEXT: An electrostatic accelerator used as an injector in the  
7.0 GeV proton synchrotron developed in 1956 by NII-EFA is  
described. The pressure chamber is 2200 mm in diameter and  
7400 mm high and is intended for working pressures of up to  
16 atm. Insulating gas is N<sub>2</sub>:CO<sub>2</sub> mixture with a ratio of partial  
pressure of 3:1. The main column is of conventional segmented  
construction using polymethylmetacrylate. Values of the  
dependence of the voltage produced on the gas pressure shows that  
4 MV is obtained at 6.5 atm and 5.7 MV at 16 atm and a relative  
humidity of < 1%. The charge transporter belt is a six layer  
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The electrostatic accelerator ...

S/120/62/000/004/006/047  
E039/E420

fabric driven by a 3000 rpm 10 KW motor at 20 m/sec. The accelerating tube and its electrode system is described in detail: it is 300 mm inner diameter with 44 segments and the residual pressure is  $2 \text{ to } 5 \times 10^{-6}$  mm Hg. A Penning type discharge is used in the ion source which provides 0.3 mA total ion current on continuous operation or 20 mA pulsed; the proton component being 10 to 12% and 65% respectively. The energy of the injected particles is stabilized to about 0.1%. Results of operation in 1960-61 show that beam currents of 4 to 5 mA are obtained at 4 MV. There are 10 figures and 1 table.

ASSOCIATIONS: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)  
Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 6, 1962

Card 2/2

407h1

S/120/62/000/004/007/047  
E039/E420

24.6730  
AUTHORS: Malyshev, I.F., Popkovich, A.V., Mikhelis, Ya.L.,  
Martyugov, G.M., Artemov, A.D., Karpenko, N.M.

TITLE: The vacuum system of the 7 Gev proton synchrotron

PERIODICAL: Pribery i tekhnika eksperimenta, no.4, 1962, 46-51

TEXT: The vacuum chamber of the synchrotron consists of 112 curved sections in the magnet gaps and 112 straight sections situated between the magnet blocks. The curved sections (except for 11 sections containing accelerating electrodes, situated in X-blocks) are constructed from corrugated tubes of 1X18H9T (1Kh18N9T) steel; thickness 0.3 mm, convolutions 3 mm deep and a pitch of 7 mm and of elliptical cross-section 114 and 84 mm along axes. On the straight sections are mounted the vacuum manifolds and apparatus for observing the beam, e.g. measurement of intensity and position of beam and also lost particles. 56 Oil diffusion pumps type BA-05 (VA-05) with semiconductor refrigerators and liquid nitrogen traps are used to evacuate the working space and there are 14 forevacuum pumps type BH-1 (VN-1). The vacuum chamber can be divided into 14 sections by means of  
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The vacuum system of ...

S/120/62/000/004/007/047  
E039/E420

gate valves which can be operated manually or by remote control. A working pressure of about  $2 \times 10^{-6}$  mm is achieved. Detailed diagrams of the layout of the system and the main components are given. There are 7 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: April 6, 1962

Card 2/2

POPKOVICH, A. V.

L 13221-65 EWF(1)/EWG(k)/EWI(m)/EPA(sp)-2/EPA(w)-2/EEC(t)/I/EEG(h)-2/EWA(π)-2  
Pz-6/Po-4/Pzb-20/Pi-4 1JP(c)/SSD(b)/ASD(p)-3/BSO/AEDC(b)/R:EM(a)/ETD(ε)/ESD(t)  
DM/AT

ACCESSION NR: AP4047415

S/0089/64/017/004/0287/0294

AUTHORS: Gashev, M. A.; Gustov, G. K.; D'yachenko, K. K.; Komar, Ye. G.; Maly'shev, I. F.; Monoszon, N. A.; Popkovich, A. V.; Ratnikov, B. K.; Rozhdestvenskiy, B. V.; Rumyantsev, N. N.; Saksaganskiy, G. L.; Spevakova, F. M.; Stolyov, A. M.; Strel'tsov, N. S.; Yavno, A. Kh.

TITLE: Main technical characteristics of the "Tokamak-3" experimental thermonuclear installation

SOURCE: Atomnaya energiya, v. 17, no. 4, 1964, 287-294

TOPIC TAGS: thermonuclear pinch, thermonuclear fusion, plasma research, plasma pinch/Tokamak-3

ABSTRACT: The "Tokamak-3" is intended for the investigation of a toroidal quasi-stationary discharge in the strong longitudinal magnetic field. The toroidal discharge is produced in the vacuum cham-

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L 13271-65

ACCESSION NR: AP4047415

ber by a vortical electric field, and acts as an equivalent secondary turn of a pulse transformer. The produced plasma pinch is stabilized with a longitudinal magnetic field of a toroidal solenoid, inside which the vacuum chamber is located. The magnetic core of the pulse transformer carries the primary vortical-field winding, the demagnetization winding, and the winding for induction heating. The setup is fed from special power systems. The electromagnetic system, the power supply, and the vacuum system are described in some detail. The longitudinal field intensity reaches 40 kG. The vortical field values are 250 and 50 V per turn with pulse durations 10 and 50 milliseconds, and with programming of the waveform such as to maintain a constant current in the plasma pinch. The power supply delivers a peak power of 77,000 kW, maximum 7000 A, no-load voltage 11 kV, and stored energy 180 million Joules. The vortical field is fed from four capacitor banks rated 1000  $\mu$ F at 20 kV, 11,000  $\mu$ F at 10 kV, 78,000  $\mu$ F at 5 kV, and 30,000  $\mu$ F at 5 kV. The capacitor-bank parameters can be varied over a wide range. The vacuum in the liner does

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ACCESSION NR: AP4047415

not exceed  $1-2 \times 10^{-7}$  mm Hg during the interval between gas admission, with the pressure in the outside chamber being  $1-2 \times 10^{-6}$  mm Hg. Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 23Nov63

ENCL: 00

SUB CODE: NP, ME

NR REF SOV: 000

OTHER: 000

Card 3/3

POPEKOVICH, G.A.; YERMOLENKO, N.P.; SHULYAKOVSKAYA, Z.A.

Adsorption of organic acids on coals and silica gel. Vestsi AN  
BSSR.Ser.khim.nav. no.2:103-105 '65.

(MIRA 18:12)

YERMOLENKO, N.F.; POPKOVICH, G.A.; KAZAK, A.F.

Structure and sorption activity of silica gel aminated by the  
coprecipitation method. Vestsi AN BSSR.Ser.khim.nav. no.2:99-  
102 '65. (MIRA 18:12)



POPKOVICH, G. S.

Cand. Tech. Sci.

Dissertation: "Distribution of the air in air tanks and its feed control."  
15 Mar 49

Academy of Communal Economy imeni

K. D. Pamfilov

SO Vecheryaya Moskva  
Sum 71

POPKOVICH, G.S.

KOZHINOV, V.F.; POPKOVICH, G.S.; KARLINSKAYA, M.I.; KUBLANOVSKIY, L.B.,  
kandidat tekhnicheskikh nauk, retsenzent; KONYUSHKOV, A.M.,  
kandidat tekhnicheskikh nauk, redaktor; SMIRNOV, A.P., redaktor;  
PERSON, M.W., tekhnicheskiiy redaktor.

[Automation in the work of water supply and sewage disposal  
installations] Avtomatizatsiya raboty vodoprovodno-kanalizatsion-  
nykh sooruzhenii. Moskva, Gos.izd-vo lit-ry po stroitel'stvu i  
arkhitekture, 1955. 257 p. (MLRA 9:1)

(Automation--Water-supply engineering)  
(Sewage--Purification)

*POPKOVICH G.S.*  
BAKUTIS, Vladimir Eduardovich, dotsent, kandidat tekhnicheskikh nauk;  
~~POPKOVICH G.S.~~ redaktor; SOKOL'SKIY, I.F., redaktor izdatel'stva;  
KONYASHINA, A.D., tekhnicheskii redaktor

[Sanitary services in cities] Sanitarnoe blagoustroistvo gorodov.  
Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1956.  
310 p. (MIRA 10:2)  
(Municipal engineering)

*POPKOVICH, G.S.*  
LENSKIY, Vasilii Alekseyevich, dots. kand.tekhn.nauk; PAVLOV, Vasilii Ivanovich, dots.kand.tekhn.nauk [deceased]; PISKUNOV, P.I., prof. doktor tekhn.nauk, retsenzent; ZANEVSKIY, M.S., dots.kand.tekhn.nauk, nauchnyy red.; POPKOVICH, G.S., kand.tekhn.nauk, dots., nauchnyy red. BORSHCHEVSKAYA, N.M., red.izd-va; SMIRNOVA, A.P., red.izd-va; GUSEVA, S.S., tekhn.red.

[Water supply and sewerage] Vodosnabzhenie i kanalizatsiya. Izd. 2-oe, perer. Moskva, Gos. izd-vo lit-ry po stroit. i arkh., 1957. 379 p. (MIRA 11:2)

(Sewerage) (Water supply engineering)

POPKOW, Maria

Subacute necrosis of the liver in the course of viral hepatitis  
in a case of chronic tetraethyl lead gasoline poisoning. Pol.  
tyg. lek. 20 no.18:650-651 3 My '65.

1. Z Kliniki Choroób Zakaznych AM we Wroclawiu (Kierownik: prof.  
dr. med. Jozef Kaniak).

POPKOW, Maria; WITECKI, Jerzy

Recurrent viral hepatitis in the light of the study of proteins.  
Polskie arch. med. wewn. 12 no.5:469-476 '62.

1. Z Kliniki Chorob Zakaznych AM we Wroclawiu Kierownik: prof. dr  
med. J. Kaniak.  
(HEPATITIS INFECTIOUS blood) (BLOOD PROTEINS)

POPOLANSKY, Frantisek, inz. CSc.

Study of lightning strokes on high objects in Czechoslovakia.  
El tech obzor 53 no. 5:242-247 My '64.

Research on lightning and lightning protection. Ibid.:287-289

1. Research Institute of Power Engineering, Brno.

ACCESSION NR: AP4038931

Z/0017/64/053/005/0242/0247

AUTHOR: Popolansky, Frantisek (Engineer, Candidate of sciences)

TITLE: An analysis of lightning strokes hitting into high objects in Czechoslovakia

SOURCE: Elektrotechnicky obzor, v. 53, no. 5, 1964, 242-247

TOPIC TAGS: lightning, lightning stroke, atmospherics, direct lightning stroke, lightning current, lightning current measurement, lightning flash, probability statistics

ABSTRACT: The article gives some data concerning the results of a statistical analysis of lightning stroke frequency and amplitude of lightning currents. The measurements were carried out on high smokestacks and towers in Czechoslovak territory. Purpose of study was an attempt to augment the available data serving as the basis for the calculation of atmospheric over-voltages. The measurements encompassed the years 1959-1962 and covered 914 objects per year with 110 lightning strokes. The probability of strokes and amplitude risk of the lightning currents was examined. The relatively high probability of lightning strokes will bring about the testing of new types of equipment for an overall analysis of lightning discharges. In the case of high objects with an average height of 70 meters,

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POPLASKIY, Yu. V.

POPLASKIY, Yu. V.: "The problem of the hydrodynamic calculation of columns with bell covers." Min Higher Education USSR. Moscow Inst of Chemical Machinebuilding. Moscow, 1956. (Dissertation for the Degree of Candidate in Technical Science.)

Source: Knizhnaya letopis'

No. 28

1956

Moscow

EXCERPTA MEDICA Sec 18 Vol 4/1 Cardiovas. Dis. Jan 60

255. **Observations on disturbances of blood coagulability in cases of congenital heart failure with cyanosis** Spozrzenia nad zaburzeniami krzepiwosci krwi przy wadach wrodzonych serca przebiegajacych z sinica. POPLASWKA B. II Klin. Chor. Wewn. A. M., Warszawa *Probl. lek.* 1958, 5/2 (115—120) Tables 1

The blood coagulability was examined in 26 cases, 14 of whom had profuse nasal haemorrhages, haemoptysis, etc. Conclusions were that in the course of morbus caeruleus symptoms of disturbances of haemostasis were comparatively frequent.

They appeared either as persistent bleeding or as disturbances of blood coagulability. Deviations in the process of coagulability from the normal consisted of: (a) disturbances in the range of contractibility of the clot, (b) deficiency in the number of blood platelets of considerable degree, and (c) lowering of fibrin level. The above observations are of significant value for the pre-operative and postoperative period in cases where it is necessary to administer anticoagulants. (XVIII, 7)

<sup>36938</sup>  
S/136/62/000/004/0C3/004  
E193/E383

18.1285

AUTHORS: Mikheyev, V.S. and Poplaukhin, A.S.

TITLE: Effect of cold deformation and annealing on the  
mechanical properties of commercial-grade titanium

PERIODICAL: Tsvetnyye metally, no. 4, 1962, 64 - 69

TEXT: The object of the present investigation was to study the effect of deformation in cold-rolling, and annealing time and temperature on the mechanical properties of commercial-grade titanium,  $\text{Ti-O}$  (TG-O), containing the following impurities (%): 0.04% C, 0.12% Fe, 0.03% Si, 0.10%  $\text{O}_2$ , 0.06%  $\text{N}_2$  and 0.008%  $\text{H}_2$ .

The preliminary treatment consisted of rolling the material to sheet, 2.33 and 12 mm thick, and then annealing it at 600 °C. After annealing, the metal was cold-rolled at a rolling speed of 15 m/min until evidence of edge cracking was observed, the direction of the cold-rolling being always parallel to the direction of hot-rolling. The maximum degree of deformation attained was 80 - 85%. The mechanical properties (UTS, yield point, elongation and reduction in area) were determined on

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Effect of cold deformation,....

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specimens cut in a direction parallel, normal and at  $45^\circ$  to the direction of rolling. The cold-rolled material was annealed at  $650^\circ\text{C}$  for 30, 90 or 210 min and cooled in air. The most significant results are reproduced in Fig. 3, where  $\sigma_B$  (UTS),  $\sigma_S$  (yield point) and  $\delta$  (elongation) are plotted against the degree of cold plastic deformation (reduction in thickness  $\eta = H-h/H \cdot 100\%$ ), graph a relating to material cold-rolled at  $20^\circ\text{C}$ , graph  $\epsilon$  to specimens annealed for 90 min at  $650^\circ\text{C}$ . These and other results can be summarized as follows. 1) The cold-workability of Ti, expressed as the reduction in thickness corresponding to the appearance of the first edge crack in flat rolling, was 80 and 87.5% for strip 2.33 and 12 mm thick, respectively. The UTS of the specimens given these reductions was 89.2 and 95.2  $\text{kg/mm}^2$ , respectively, the decrease in elongation after these reductions being 76 and 40%, respectively. 2) Cold-worked Ti was anisotropic in respect of all the mechanical properties studied. Anisotropy of elongation and reduction in area persisted after annealing

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Effect of cold deformation ....

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and was most pronounced in thin specimens. 3) The UTS of specimens annealed for 30 min at 650 °C was practically independent of the degree of preliminary cold plastic deformation and equal to that of undeformed material. The plastic properties of annealing specimens increased with increasing degree of preliminary deformation. Thus, for instance, elongation, measured in the direction of rolling, was about 32% for undeformed material and about 55% for material given 80% reduction and annealed for 30 min at 650 °C. The  $\delta/\eta$  curves for specimens annealed under these conditions and tested in the direction normal to and at 45° to the direction of rolling had a minimum at  $\eta = 30\%$ ; this was attributed to the excessive grain growth after this degree of deformation. 4) Very high plastic properties can be attained by heavy plastic deformation followed by annealing. In the case of strip 2.33 mm thick given 80% reduction, values of  $\delta = 47$ , 58 and 56.5% were obtained on specimens tested in the direction parallel, normal and at 45° to the direction of rolling,

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MIKHEYEV, V.S.; POPLAUKHIN, A.S.

Effect of cold deformation and annealing on the mechanical  
properties of commercial-grade titanium. TSvet. met. 35  
no.4:64-69 Ap '62. (MIRA 15:4)  
(Titanium--Testing)

POPLAUKHIN, S. G., (Supervisor of the epizootiological Department of the Altai NIVS)

Survival terms of foot-and-mouth virus in products of slaughtered cattle

Veterinariya vol, 38, no. 10, October 1961, pp 70



POPKOVICH, Ye., inzh.; KURKIN, S., inzh.

Industrial methods of constructing heat systems. Na stroi.Ros.  
3 no.6:20-21 Je '62. (MIRA 16:7)  
(Chelyabinsk heating pipes)

USSR/Diseases of Farm Animals. Diseases Caused  
by Viruses and Rickettsiae.

R-1

Abs Jour : Ref Zhur-Biol., No 20, 1958, 92688

Author : ~~Poplakhin, S. G.~~

Inst : Altayskiy Kray Scientific Research Veter-  
inary Station.

Title : Experiment in Applying Inactivated Blood  
Serum to Combat Bovine Foot-and-Mouth  
Disease in Altayskiy Kray.

Orig Pub : Sb. nauchn. rabot Altaysk. krayovoy n.-1.  
st., 1957, 1, 102-111

Abstract : The use of inactivated serum (IS) from the  
blood of animals afflicted with foot-and-  
mouth disease showed that it possessed im-  
munizing properties against the strain of

Card : 1/3

USSR/Diseases of Farm Animals. Diseases Caused  
by Viruses and Rickettsiae.

R-1

Abs Jour : Ref Zhur-Biol., No 20, 1958, 92688

of the diseased cattle did not stop the  
epizooty but made the course of the dis-  
ease milder. Animals inoculated with IS  
did not become infected upon contact with  
virus carriers (animals that had already  
had the disease). The activity of the se-  
rum depends on a whole series of factors  
requiring study. -- A. D. Musin

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POPLAUKHIN, S. G.

USSR / Diseases of Farm Animals. Diseases Caused by  
Viruses and Rickettsiae.

R-2

Abs Jour : Ref Zhur - Biol., No. 17, 1958, No 78928

Author : Poplaukhin, S. G.

Inst : Altay Kray Scientific Research Veterinary Station.

Title : Peculiarities of the Course of an Epizootic of Hoof-and-Mouth Disease in the Altay Kray.

Orig Pub : Sb. nauch. rabot Altaysk. krayevoy n.-i. vet. st., 1957,  
vyp. 1, 112-118.

Abstract : No abstract.

Card 1/1

POPLAUKHIN, S.G.

Length of survival of the foot-and-mouth diseases virus in the products made from slaughtered cattle. Veterinariia 38 no.10: 70-71 0 '61. (MIRA 16:2)

1. Zaveduyushchiy epizootologicheskim otdelom Altayskoy nauchno-issledovatel'skoy veterinarnoy stantsiyey.  
(Foot-and-mouth disease)

Country : USSR  
 Category : Diseases of Farm Animals. R  
           : Toxicoses.  
 Abs. Jour. : Ref Zhur-Biol., No 21, 1958, 97030  
 Author : Poplaukhin, S. G.  
 Institut. : Altay Kray Scientific Research Veterinary\*  
 Title : Poisoning of Lambs on Millet Pastures.  
 Orig Pub. : Sp. nauchn. rabot. Altaysk. krayevoy n.-i. vet.  
           : st., 1957, vyp. 1, 188-191  
 Abstract : At some kolkhozes of the steppe area of the  
           : Altay Kray where sheep were grazed on millet  
           : pastures, lambs were observed to become sick  
           : displaying such symptoms as swelling of the  
           : lips, nostrils and ears, the appearance of jaun-  
           : dice on the hairless parts of the skin, blocking  
           : of eyelids, profuse lacrimation and seropulent  
           : conjunctivitis. Subsequently, adhesion of the  
           : palpebral fissure, loss of eyesight and finally,  
           : after 10-12 days death of the animals followed.

Card: 1/2

POPLAVATSKAYA, T.G.

STRUCTURE AND PHYSICAL PROPERTIES OF MATTER IN A LIQUID STATE  
reports read at the 4th Conference convened in KIEV from 1 to 5 June  
1959, published by the publishing House of KIEV University, KIEV,  
USSR, 1962

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L.F. VUKS, On the Connection Between the Rotary Mobility of Molecules and Viscosity	11
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POPLAVKIN, D. L. (Engineer, Riga), SHKURATOVSKIY, G. D. (Engineer, Tallin), SAPIRO, L. S. (Candidate of Technical Sciences, Donetsk), MAZUS, A. A. (Engineer, Tallin), and BERSHTEYN, V. O. (Engineer)

"The production of welding materials from local raw materials, improvement of power sources, and personnel training".

Report presented at the 3rd Baltic Conference on Welding, convened by the Sovnarkhozes of the Lithuanian SSR, Latvian SSR, and Estonian SSR, 8-9 April 1964, Vilnyus.

[Avtomaticeskaya SVARKA, No. 7, 1964 p. 95)



USSR/Cultivated Plants - Grains.

M.

Abs Jour : Ref Zhur - Biol., No 4, 1958, 15557

Author : A. Poplavko

Inst :

Title : What Must One Foresee When Sowing Standardized Corn Seeds.  
(Chto sleduyet predusmotret' pri vyseve kalibrovannykh semyan kukuruzy).

Orig Pub : Zemledeliye i zhivotnovodstvo Moldavii, 1957, No 3, 10-17.

Abstract : No abstract.

Card 1/1

*POPLAVKO, M. V.*

SLAVIN, D. O.; SOKOLOV, N. V.; GAVRIILKIN, N. N.; POPLAVKO, M. V.; SHUVALOV, Yu. A.

Tekhnologiya Metallov, published by Mashgiz, Moscow, 1949

~~DATA~~ Sum #148

POPIAYKO, M. V.

BALKOVETS, Dmitriy Stepanovich; ORLOV, Boris Dmitriyevich; CHULOSENIKOV, Pavel Leonidovich; GEL'MAN, A.S., doktor tekhnicheskikh nauk, professor, retsenzent; ~~POPIAYKO, M.V.~~, kandidat tekhnicheskikh nauk, retsenzent; VEYS, A.L., kandidat tekhnicheskikh nauk, redaktor; BOGOMOLOVA, M.P., izdatel'skiy redaktor; ROZHIN, V.P., tekhnicheskiiy redaktor

[Spot and roll welding of special steels and alloys] Tochechnaia i rolikovaiia svarka spetsial'nykh stalei i splavov. Moskva, Gos.izd-vo obor.promyshl., 1957. 429 p.  
(Welding) (MLRA 10:9)

POPLAVKO, M.V.

18(2)

PHASE II - ABSTRACTS

AB-1

Akademiya nauk SSSR. Institut metallurgii

Titan i yego splevy; metallurgiya i metallovedeniye (Titanium and Its Alloys; Metallurgy and Physical Metallurgy) Moscow, Izd-vo AN SSSR, 1958. 209 p. 4,000 copies printed.

Resp. Ed.: N.V. Agayev, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: V.S. Rzhiznikov; Tech. Ed.: A.A. Kiseleva.

INTRODUCTION: This book, of which a Phase I Exploitation (SOV/1200) has been prepared, is a collection of scientific papers devoted to the study of titanium and its alloys from three main points of view: physical metallurgy, forming, and welding. Special problems investigated include structural changes occurring during welding, determination of the content of harmful gases, development of industrial methods of rolling, and oxidation at various temperatures.

PART I. PHYSICAL METALLURGY

CARD 1/43

## Titanium and Its Alloys (Cont.)

AB-1

grain growth is intensive and to decreasing the cooling rate in the  $\beta \rightarrow \alpha$  transformation temperature range. There are 12 figures, 2 tables, and 2 references (both Soviet).

Poplavko, M.V., N.N. Manuylov, and L.A. Gruzdeva (Ministry of the Aircraft Industry of the USSR) Some Problems in the Welding and Soldering of Commercial Titanium 194

VT-1D commercial titanium, which has a one-phase (alpha) structure, was investigated for weldability. Tests were performed on sheet metal rolled from ingots that were produced in an arc furnace with a nonmelting tungsten electrode. Conclusions. (1) VT-1D titanium sheet metal, when its properties are stable and its plasticity sufficiently high, exhibits good weldability characteristics in the following types of welding: argon-shielded arc welding (manual and automatic), spot welding, seam welding, and butt welding. (2) In order to produce welded joints with good properties, it is necessary to remove, before welding, any scale present on the surface as well as the surface layer of metal itself, if it is contaminated with gases (oxygen, hydrogen, nitrogen). These layers can be successfully removed by pickling in an acid medium. Scale removal can be facilitated

Card 46/43

## Titanium and Its Alloys (Cont.)

AB-1

by preliminary sand blasting or by pickling with alkaline and acid reagents. (3) Ductile welded joints without cracks may be produced by arc welding only by protecting the joints both on the welding side and the reverse side with an atmosphere of inert gases of high purity (argon or helium). (4) Welded joints produced by argon-shielded arc welding of VT-1D titanium sheets of satisfactory ductility have the following mechanical properties: (a) the ultimate strength at room temperature and elevated temperatures is not lower than that of the parent metal (also true of seam-welded joints); (b) the angle of bend of the seam metal is not less than that of the base metal, and often exceeds it; (c) the impact toughness of the weld metal and the transition zone are somewhat lower than that of the base metal (with a decrease in temperature the impact toughness drops); (d) the fatigue limit of welded joints under completely reversed bending stress (on the basis of  $10 \times 10^6$  cycles) is  $17 \text{ kg/mm}^2$ , that is, not lower than that of welded joints of 30KhGSA steel, which has a tensile strength of  $120 \text{ kg/mm}^2$ . (5) Ordinary annealing does not produce any material effect on the mechanical properties of welded joints, but does decrease internal stresses. Vacuum annealing, however, does affect these properties, and in addition frees the metal of hydrogen. This type of annealing considerably increases

Card 41/43

Titanium and Its Alloys (Cont.)

AB-1

the ductility of the weld metal. (6) VT-1D titanium shows little tendency to form cracks at high temperatures. Such a tendency at room temperature and below depends on the ductility of the original metal. Sheets of high ductility do not form such cracks.

(7) VT-1D titanium can be soldered with pure silver in a furnace with an atmosphere of pure helium (in special chambers) or by heating in an electrical resistance machine. There are 5 tables, 1 figure, and 6 references (all English).

Gurevich, S.M. (Institute of Electric Welding, Ukrainian Academy of Sciences) The Effect of Aluminum on the Structure and Properties of Titanium Welded Joints

205

An investigation was made of the effect of the various amounts of aluminum (from 1 percent to 7 percent) on the structure and mechanical properties of welded titanium joints produced by means of a melting electrode. The base metal consists of plates of Mg-reduced titanium 3 mm. in thickness. The weld metal was alloyed with aluminum in amounts of 1, 3, 5, and 7 percent by making automatic butt welds with the use of aluminum wires of various diameters. For purposes of comparison, similar welds were made without aluminum. Conclusions. (1) Alloying of titanium welded joints with

Card 42/43

POPLAVKO, M.V.; MANUYLOV, N.N.; GRUZDEVA, L.A.

Welding and soldering processes of commercial titanium. Titan i  
ege splavy no. 1:194-204 '58. (MIRA 14:5)

1. Ministerstvo aviatsionnoy promyshlennosti SSSR.  
(Titanium--Welding)



18(5,7)

SOV/125-59-7-7/19

AUTHOR: Poplavko, M.V., Strizhevskaya, I.G. and Nikiforova, V.G.  
(Moskva)

TITLE: The Effect of Alloys on Welding of Copper by Automatic Argon Arc Welding Machines with Tungsten Electrodes

PERIODICAL: Avtomaticheskaya svarka, 1950, Nr 7, pp 46-56 (USSR)

ABSTRACT: The welding properties of copper alloys containing Ni, Al, Si, Cd, Co, Cr, Zr and Ti have been researched into. According to the effect exercised on copper welding, all the enumerated elements can be divided into three groups: 1) elements that form with copper a number of hard solutions - Ni; 2) elements which are dissoluble in copper in limited quantities only - Al, Si, Cd, Be, Co; 3) elements that form with copper eutectic mixtures and chemical compositions - Cr, Zr, Ti. The welding of copper containing Ni (0,2-1%) does not differ from pure copper welding. The presence of Ni in such quantities even improves the welding properties of copper. The welds obtained possess high porosity

Card 1/3

SCV/125-52-7-7/19

The Effect of Alloys on Welding of Copper by Automatic Argon Arc  
Welding Machines with Tungsten Electrodes

and are very plastic. Al is dissoluble in copper up to 9% (at 500°C); however, its presence sharply affects the welding properties of copper, even when it appears in small quantities. Alloys with Si-contents (0,01 - 0,4%) permit good welding; otherwise, Si is dissoluble in copper up to 4% (at 400°C). Cd in quantities of 0,09-0,6% tends to form hot cracks during the process of welding. Fe has a strong negative bearing on the welding of copper. The welds of alloys containing 0,05-0,5% Fe are rough, cracked and have a dark oxidized surface. Introduction of Co in quantities of 0,2-1,5% does not affect the copper welding. The welds are well formed, their surface is smooth and bright. The system Cu-Cr, with 0,65% Cr, forms an eutectic mixture. Admitted in quantities of 0,3-1,2% Cr improves the welding properties of copper. However, the larger amounts of Cr affect the welding. The welds are normally smooth and even; their surface is of a gray-blue

Card 2/3

SOV/125-59-7-7/19

The Effect of Alloys on Welding of Copper by Automatic Argon Arc  
Welding Machines with Tungsten Electrodes

color. Zr in quantity of 13,7% forms with copper an euthestic mixture; otherwise, Zr has a negative effect on the welding. Only when its contents are very small it does not affect the welding. Ti worsens the welding as it forms with copper a number of brittle compositions, ( $TiCu_3$ ,  $TiCu$ , etc.). It increases the number of cracks during the process of welding. The welds obtained through argon arc welding on systems Cu-Co and Cu-Cd are highly porous. Introduction of Si, Cr, Ti, Be, Al and Zr entails disappearance of weld porosity. Co, Si, Cr, and Cd make the weld very plastic. The strength of welds of copper alloys containing Cr, Si, Cd, Co, Ni and Zr amounts to 80-85% of the base metal strength. The welding properties of copper alloys can be essentially altered by adding special filler metals. There are 3 graphs, 12 photographs and 3 Soviet references.

Card 3/3

SUBMITTED:

February 17, 1959

SOV/340

18(1,3)

PHASE 2: BOOK EXPLORATION  
Sovetskaniye po primeneniyu reduktsionnykh elementov dlya  
licheniya fiziko-mekhanicheskikh svoystv konstruktsionnykh i  
spetsial'nykh staley i splavov  
Reduktsionnyye elementy v stalyakh i splavakh; Uchebnoye...  
(Rare Earth Elements in Steels and Alloys; Transactions of a  
Conference on the Properties of Structural and Special Steels  
and Alloys) Metallurgizdat, 1959. 246 p. Errata slip  
inserted. 3,150 copies printed.

Ed.: A. A. Froshogin; Ed. of Publishing House: A. L. Ozeretskiy;  
Tech. Ed.: P. G. Ialant'yan.

PURPOSE: This book is intended for engineers, technicians and  
scientists engaged in the metallurgy of heavy and nonferrous  
metals, and may be used by students of higher educational  
schools, who are specializing in the metallurgical science of  
these metals.

SCOPE: Investigation and uses of rare earths as alloying  
components in steels and alloys. The influence of rare earth  
additives in improving the technical properties of structural,  
fire-resistant and other steels and alloys is also described.  
Figures, tables and references (mostly Soviet) accompany each  
article. 10 References of Ecological Sciences, Institut minero-  
logii, geologii i khranilishcham redkikh elementov, AN SSSR  
(Institute for Mineralogy, Geochemistry and State of Rare Earths  
Graphy of Rare Earth Elements, AN USSR), the State of Rare Earths  
Production and the Trend in Its Development (According to non-  
Soviet literature)

Yeremich, V. V., Engineer, Candidate of Chemical Sciences;  
N. M. Nikolayev, and R. P. Kuznetsov, Engineers. Methods of De-  
termining Small Amounts of Rare Earths in Steels

Savitskiy, Ye. M., Doctor of Chemical Sciences; V. P. Terakova,  
Candidate of Technical Sciences; and V. A. Talalayov, Engineer,  
Investigation of the Physicochemical Interaction of Rare Earth  
Metals With Iron and Steel

Meznikova, S. Ye., Engineer, Effect of Rare Earths on the  
Sulfur and Oxygen Contents of Molten Steel and the State of  
Sulfur in Solid Steel

Kulagin, V. S., Engineer, Dependency of the Mechanical  
Properties of Structural Steel 37KhM3A on Reducing Agents  
and Methods of Extraction

Gulyayev, B. B., Doctor of Technical Sciences; I. A. Shapranov,  
Candidate of Technical Sciences; G. M. Kuznetsov, Candidate  
of Technical Sciences; and M. V. Kuznetsov, Engineer, Influence  
of Rare Earths on the Crystallization and Mechanical Properties  
of Cast Steel

Verbol'skiy, Ye. D., Engineer; L. V. Isakov, Engineer; and  
A. Ye. Khlebnikov, Doctor of Technical Sciences. The Effect  
of Cerium Additives on the Properties of Cr-Ni-Mo Steel for  
Shaped Steel Casting

Gol'dshtern, Ya. Ye., Candidate of Technical Sciences, and  
O. D. Khlebnikova, Engineer. The Effect of Cerium on the  
Structure and Properties of Cast and Forged Steel

Kopp, L. P., Candidate of Technical Sciences, and  
G. K. Petukhov, Candidate of Technical Sciences. Study of  
the Effect of Rare Earths on the Physicochemical Proper-  
ties of Cr-Ni-Mo Steel

Studenits, M. A., Candidate of Technical Sciences;  
Yu. E. Konov, Engineer, and A. I. Sokolov, Engineer,  
The Influence of Rare Earths on the Nature of Fracture  
and the Structure and Properties of Steel

Danilova, O. P., Candidate of Technical Sciences;  
M. V. Mal'tsev, Doctor of Technical Sciences, M. V. Topolayko,  
Candidate of Technical Sciences, Additives for Welding  
Titanium Alloys

Ioffe, V. M., Candidate of Technical Sciences, and V. M. Burov,  
Engineer, Electrochemical Method of Producing Much Metal-  
Magnesium Alloys for Modified Cast Iron

Kopp, L. P., Candidate of Technical Sciences; L. M. Shigida,  
Engineer, and O. D. Sukhova, Engineer, Problems of Causes for the  
Low Plasticity of Kh23M18-Ti-0.01C Steel at High Temperature and  
Possibilities of Improving This Condition With Rare Earths

44008

S/860/61/000/000/003/020

A006/A101

1 3000

1 2300

AUTHORS:

Poplavko, M. V., Milyayev, B. F., Yelkin, I. S., Finkel', V. M.

TITLE:

A device for manufacturing welded honeycomb panels

SOURCE:

Sbornik izobreteniy; svarochnaya tekhnika. Kom. po delam izobr. i  
otkrytiy, Moscow, Tsentr. byuro tekhn. inform. 1961, 98 - 99.  
(Author's Certificate no. 113272, cl. 21h, 29<sub>12</sub>; no. 583433 of  
September 20, 1957)

TEXT:

Honeycomb panels are manufactured by shaping a corrugated strip  
and welding it onto a sheet facing. A device is proposed where the shaping and  
welding processes are combined by using a dented copper-alloy shaping drum as  
a fixed electrode during the resistance welding of the panels. The lower guide  
drum is made of steel. The facing strip is supplied under the welding roll mov-  
ing reciprocatingly in the transverse direction. A second roll and a bar are  
used to weld the lower facing strip to the corrugated strip. The hollow spaces  
between the crimps are filled with copper split locks. The machine is highly  
efficient and can be used to manufacture two-and three-layer high-quality panels.  
There is 1 figure.

Card 1/1

44009

S/860/61/000/000/004/020

A006/A101

1 3000

AUTHORS:

Poplavko, M. V., Milyayev, B. F., Yelkin, I. S., Finkel', V. M.

TITLE:

A machine for manufacturing honeycomb assemblies

SOURCE:

Sbornik izobreteniy; svarochnaya tekhnika. Kom. po delam izobr. i  
otkrytiy. Moscow, Tsentr. byuro tekhn. inform. 1961, 99 - 100  
(Author's Certificate no. 114884, cl. 21h, 29<sub>12</sub>; no. 585411 of  
October 29, 1957)

TEXT:

The machine is intended for the production of honeycomb assemblies from metal strips which are shaped and welded by the resistance method. The shaping and welding unit is made of two pairs of geared dented rolls used for the grooving of two strip blanks. The copper alloy guided rolls are connected with the power source. The machine is equipped with shears and gauges to measure and cut the strips. The operation of the machine is described. It is highly efficient; the production process is fully mechanized and continuous. There is 1 figure.

Card 1/1

POPLAVKO, M.V., MANUYLOV, N.N., GRUZDEVA, L.A.

Welding of titanium-base alloys. Titan i ego splavy no.3:141-  
146 '60. (MIRA 13:7)

(Titanium alloys--Welding)

S/137/62/000/006/160/163  
A057/A101

AUTHORS: Poplavko, M.V.; Manuylov, N.N.; Grudeva, L.A.

TITLE: Welding of titanium alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 8, abstract 6E51  
(V sb. "Svarka tsvetn. met. i splavov". Moscow, Oborongiz, 1961,  
72 - 110)

TEXT: Problems of weldability and technology of welding of Ti and its alloys are discussed. The effect of gases and alloying elements (Al, Sn, Mn, Fe, Mo, V, Cu and others) upon the properties of weld joints is analyzed. The characteristics of weldability of alloys of the systems Ti-Al-Mn, Ti-Al-Mo, Ti-Al-V and Ti-Al-Cu are presented. The effect of small additions of B, Zr, Ce, La and Re upon the weldability of Ti-alloys is demonstrated. Recommendations for the thermal treatment of Ti-alloys are given. ✓

V. Tarisova

[Abstracter's note: Complete translation]

Card 1/1



S/137/62/000/005/132/150  
A160/A101

AUTHORS: Poplavko, M. V., Strizhevskaya, L. G.

TITLE: The weldability and the technology of welding copper alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 18, abstract 5E80  
(V sb. "Svarka tsvetn. met. i splavov", Moscow, Oborongiz, 1961,  
111 - 158)

TEXT: The following problems are investigated: the properties of copper and its welding characteristics; the effect of the alloying elements on the weldability of copper in argon-arc welding with the help of a W-electrode; the technology of welding copper and its alloys in a medium of inert gases; the electric and heat conductivity of the metal of welds of copper alloys; and the welding of copper and its alloys with other metals (ferrite, austenite and austenite-ferrite steels, Ni and Al).

V. Tarisova

[Abstracter's note: Complete translation]

Card 1/1

S/137/62/000/005/133/150  
A160/A101

AUTHORS: Poplavko, M. V., Gerasimenko, I. N.

TITLE: Characteristics of the welding technology of aluminum alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 18, abstract 5E83  
(V sb. "Svarka tsvetn. met. i splavov". Moscow, Oborongiz, 1961,  
5 - 29)

TEXT: Investigated are aluminum alloys used for welded products (casting and deformable alloys and sintered sheet aluminum) and the characteristics of their welding (oxidation of metals during the welding, the effect of gases and oxides on the seam metal, and the methods of evaluating the weldability and the properties of welded joints welded by various methods).

V. Tarisova

[Abstracter's note: Complete translation]

Card 1/1

35090

S/697/61/000/000/016/018

D228/D303

18.12.85  
AUTHORS: Danilova, G. P., Mal'tsev, M. V., poplavko, M. V. and Vladimirskaya, T. M.

TITLE: Addition materials for welding titanium alloys

SOURCE: Akademiya nauk SSSR. Institut metallurgii im. A. A. Baykova. Institut mineralogii, geokhimii i kristalloghimii redkikh elementov. Mezhdovedomstvennaya komissiya po redkim metallam. Vsesoyuznoye soveshchaniye po problema reniya. Moscow, 1958. Reniy; trudy soveshchaniye. Moscow, Izd-vo AN SSSR, 1961, 203-208

TEXT: In this study the aim of the authors was to create a high-grade Ti alloy with a variably modified structure in the cast state. Such material is necessary to eliminate textural defects hindering the full use of certain Ti alloys in welded structures. Details are first given about the preparation of these addition ingredients -- Ti-base alloys with different contents of Al, Nb, Mo, Re, Ce,

Card 1/3

S/697/61/000/000/016/018  
D228/D303

Addition materials for ...

and B. Data on the macrostructure of cast alloy specimens are then cited. They suggest that the introduction of small amounts of B and B-Zr ( $\ll 0.1\%$ ) decreases the grain size of the alloys. But this does not happen on the addition of Re and Ce, which instead causes marked granulation in the  $\beta$ -phase decay products. A table gives the mechanical properties of annealed alloys; it is noted that the introduction of B and B-Zr greatly strengthens Ti-Al-Nb alloy, as does the addition of Re to Ti-Al-Mo alloy. Turning to the question of the alloys' behavior during welding and plastic deformation, the authors adduce graphs to illustrate their experimental observations. These indicate that the addition of Re greatly enhances the plasticity of the welded seam in both types of alloy: The seam's bending angle is thereby increased by approx. threefold. Here Re is believed to stabilize the  $\beta$ -phase. The authors conclude from the results of their research that three kinds of Ti-base alloy can be employed as addition materials: 1) with Al 3, Nb 5, and Re 0.1%; 2) with Al 3, Mo 4, and Re 0.05-0.1%; and 3) with Al 5, Nb 5, and B 0.05%. The application of such materials will raise the quality

Card 2/3

33399

S/666/61/000/000/001/004  
D215/D305

12300

1573

AUTHORS: Poplavko, M V. and Gerasimenko, I.N.

TITLE: Features of the welding technology of aluminum alloys

SOURCE: Svarka tsvetnykh metallov i splavov; sbornik statey.  
Balkovits, D.S. and Poplavko, M.V., eds. Moscow, Oborongiz,  
1961, 5-29

TEXT: This is a brief survey of the above field on the basis of well-known Russian alloys, with occasional references to equivalent Western types, including a review of Soviet and foreign weldable alloys, cast and wrought. Sintered aluminum powder (A7(SAP) could be welded by flash-butt, resistance-spot (with intermediate sheet or aluminum coating), ultrasonics, pressure (50% deformation + heating at 500°C) or argon-arc in the presence of flux. The various aspects of weldability are discussed. In alloys with copper and silicon hot cracking was related to the percentage shrinkage contraction. Oxidation and porosity were influenced by the particular welding process, but chlorine helped to eliminate both.

Card 1/2

33399

S/666/61/000/000/001/004  
D215/D305

Features of the welding ...

Weldability criteria are quoted. Types of cracking tests, cruciform and ring, are described, together with thickness ranges of application of different processes. Adhesive bonding could be used in conjunction with spot welding to give a higher fatigue strength than riveted and welded joints. Properties of joints made in various alloys with appropriate fillers and typical alloy applications are given. There are 5 figures, 13 tables and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: Aluminum, 1957, no. 4, 250-260; The Welding Journal, 1958, v. 37, no. 6. X

Card 2/2

33401

S/666/61/000/000/003/004  
D215/D305

1.2300

1573

AUTHORS: Poplavko, M.V., Manuylov, N.N. and Gruzbeva, L.A.

TITLE: The welding of titanium alloys

SOURCE: Svarka tsvetnykh metallov i splavov; sbornik statey. Bal-  
kovits, D.S. and Poplavko, eds. Moscow, Oborongiz, 1961,  
72-110

TEXT: A general review of the subject. Pickling is necessary to remove  
oxide and gas-saturated layer prior to welding. Solution 1: 280-350  
cm<sup>3</sup> HCl (s.g.l.19) + 50 g NaF per liter; solution 2: 340-350 cm<sup>3</sup> HCl  
+ 55-60 cm<sup>3</sup> HNO<sub>3</sub> (s.g.l.14) + 50 g NaF per liter. If surface contamina-  
tion is severe, then after preliminary descaling by cold rolling or sand  
blasting the metal is pickled in 80:20 NaOH:NaNO<sub>3</sub> at 420-450°C or in phos-  
phoric acid at 270 ± 10°C followed by solutions 1 or 2. In the more power-  
ful pickling agents hydrogen absorption is a potential danger and may  
cause porosity on welding. For good welding it is necessary to (a) use

Card 1/3

33401

S/666/61/000/000/003/004  
D215/D305

The welding of titanium ...

material at the lower strength limit, but with ample ductility, (b) avoid Mark 571-2 (VT1-2) commercial Ti, (c) limit interstage pickling, (d) avoid surface coatings in areas to be welded, and (e) use clean filler wire - preferably vacuum annealed. A discussion is given of welding technology, tungsten-arc welding, typical conditions, nozzle diameter (up to 12-14 mm for manual and 14-16 for automatic welding). Measures to ensure freedom from contamination (gas backing, interpass cleaning etc) are given. For submerged-arc welding  $RM-T1$  (AN-T1) flux is used, and for electrosag welding (above 50 mm thick)  $RM-T2$  (AN-T2), with argon to shield the slag pool. In resistance welding the electrode tips must be spherical, with a radius of 20-250 mm. Alpha-phase alloy welds are only heat treated for stress relief, and normally only manual tungsten arc welds require this. Oxygen in welds is restricted to a maximum of 0.1 - 0.2%; up to 14.5% can be dissolved by  $\alpha$ -Ti which it stabilizes and embrittles. Nitrogen acts in a similar fashion, and is restricted to 0.03 - 0.05% maximum. Together, these gases promote crack formation and reduce ductility, while hydrogen can cause delayed cracking due to volume changes accompanying the precipitation of Ti hydride, and is kept below 0.015%. Similar effects occur

Card 2/3



33402

S/666/61/000/000/004/004  
D215/D305

1.2300

1573

AUTHORS: Poplavko, M.V. and Strizhevskaya, L.G.  
TITLE: Weldability and welding technology of copper alloys  
SOURCE: Svarka tsvetnykh metallov i splavov; sbornik statey.  
Balkovits, D.S. and Poplavko, M.V., eds. Moscow, Oborongiz,  
1961, 111-158

TEXT: The authors surveyed the field generally, though the treatment of tungsten arc welding was centered around their own work with K.G. Nikiforova (Avtomaticheskaya svarka, no. 7, 1959). The following topics are discussed: The various grades of Cu available, influences of O<sub>2</sub>, solubility of H<sub>2</sub>, effects of Bi, Pb and S on welding and working, influence of these and other elements on electrical conductivity and hot strength, oxidation of Cu, and the influence of alloying elements. Physical properties which complicate the welding of Cu are its high thermal conductivity, expansion coefficient, and shrinkage. Al, Si, Zn, Zr, Ti, Be, Cr

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33402

S/666/61/000/000/004/004  
D215/D305

## Weldability and welding ...

decrease porosity but Mn increases it. Effect of Bi, Pb and O<sub>2</sub> on hot cracking and the influence of alloying elements on the weldability of copper in tungsten arc welding of 1.5 mm sheet are described. Elements such as Fe, Ni, Co in which H<sub>2</sub> solubility increases with temperature tend to increase porosity in Cu, while Ti and Zr, in which H<sub>2</sub> solubility decreases with increasing temperature could possibly cause hot cracking owing to the pressure of liberated hydrogen within the lattice on heating. The effects of Ni, Mn, Fe, Co, Si, Cr, Cd, Al, Be, Zr, Ti in amounts (in most cases) up to 1.5%, their influence on porosity, hot cracking, weld and heat-affected zone microstructure and mechanical properties are given. Gas-shielded welding technology for Cu and alloys is described. Helium is preferred for tungsten-arc welding; the electrode should be vertical and filler metal added ahead of the arc in line with the deposited bead. With thin sheets the filler can be preplaced as a profiled insert and melted by the arc, preferably over stainless steel backing. The best results for Cu are obtained in P-deoxidized material (99.93% Cu, 0.06% P, 0.005% Fe) with the filler metal containing 0.25-3% silicon. Cr bronzes

Card 2/4

33402

S/666/61/000/000/004/004  
D215/D305

Weldability and welding ...

(0.4-1% Cr) are welded satisfactorily with a filler of 0.5-0.7% Ni, 0.04-0.09% Zr, remainder Cu. Cu-Ni alloys are subject to porosity and grain growth in the h.a.z., but Ti up to 0.5-0.7% and Zr 0.1-0.2% remedy this, though at the expense of bead shape. A description is given of the electrical and thermal conductivities of welded joints, influence of slag in submerged-arc welding of Cu (ceramic v.s. fused), influence of filler wire and the welding of Cu and alloys to other metals. Cu-steel joints can be made with a Cu filler with only slight surface fusion of the steel. Before welding Si bronze to steel the former is buttered with Al bronze. Mig welding of Si or Al bronze or Cu-Ni (90:10) to steel can be effected with a 10% Al electrode. Metal-arc Cu electrodes with КОМСОМОЛЕТ (Komsomolets) coatings are also used for welding Cu or Cu-Ni to steel. Submerged-arc welding with bronze wire is best for overlaying steel. Joining to austenitic steels, welding techniques to avoid excessive steel fusion, weld structures without filler or with Cu or austenitic steel filler, and tungsten arc welding of Cu and alloys to Ni and its alloys or to Al are described. There are 26 figures, 28 tables and 30 references: 21 Soviet-bloc and 9 non-Soviet-bloc. The 4 most recent references to English-language publications read as follows: E. Davis, Welding and Metal

Card 3/4

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S/666/61/000/000/004/004  
D215/D305

Weldability and welding ...

Fabrication, v. 11, no. 10 (1953); P.L. Hemmes, Welding Journal, v. 37, no. 8, (1958); V. Abaravich, The Welding Journal, v. 37, no. 3, (1958); L. Gook and M. Stavisch, The Welding Journal, v. 11, no. 4, (1956); 348-355.

X

Card 4/4

BALKOVETS, D.S., doktor tekhn. nauk, red.; POPLAVKO, M.V., kand. tekhn. nauk, red.; KITAYEV, A.M., kand. tekhn. nauk, red.; BELITSKAYA, A.M., red. izd-va; NOVIK, A.Ya., tekhn. red.

[Welding of nonferrous metals and alloys] Svarka tsvetnykh metallov i splavov; sbornik statei. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz, 1961. 159 p.

(MIRA 14:12)

(Welding)

ACCESSION NR: AT4012726

S/2981/63/000/002/0148/0152

AUTHOR: Poplavko, M. V.; Gerasimenko, I. N.

TITLE: Structure and properties of SAP weld joints

SOURCE: Alyuminiyevy\*ye splavy\*. Sbornik statey, no. 2. Spechenny\*ye splavy\*. Moscow, 1963, 148-152

TOPIC TAGS: powder metallurgy, aluminum powder, sintered powder welding, sintered aluminum powder, weld joint, SAP, SAP welding

ABSTRACT: One of the most important and complex problems is the welding of SAP to produce high-quality joints. In this connection, the need arose to develop a flow process for welding and to determine the properties of weld joints. After comparing the results with electrodes made of AK and AM<sub>6</sub> wire, a new electrode wire (V40) was designed made of aluminum plus 1.58% Mg, 1.64% Ni, 0.31% Mn, 0.14% Si, 0.10% Ti and <0.1% Be. During tests on crack formation it was found that sintered aluminum powder forms good weld joints without cracks. Comparison of the ultimate strength of weld joints made under various conditions showed that the use of V40 electrodes yields relatively strong joints. A special flow process is needed, however, to obtain solid and dense weld joints. "V.I. Il'ina also took

Card 1/2

ACCESSION NR: AT4012726

part in the work." Orig. art. has: 6 tables and 8 figures.

ASSOCIATION: none

SUBMITTED 00

DATE ACQ: 13Feb64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

POPLAVKO, Ye.M.; MARCHUKOVA, I.D.; ZAK, S.Sh.

A rhenium-containing mineral from the ores of the Dzhezkazgan deposit. Dokl. AN SSSR 146 no.2:433-436 S '62. (MIRA 15:9)

1. Nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskey promyshlennosti i Institit metallurgii im. A.A. Baykova.  
(Dzhezkazgan—Rhenium) (Minerals)



RAZENKOVA, N.I.; POPLAVKO, Ye.M.

Occurrence form of rhenium in the ores of the Dzhezhazgan deposit. Geokhimiia no.8:777-784 Ag '63. (MIRA 16:9)

1. Institute of Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements, Academy of Sciences, U.S.S.R., Moscow.

MARCHUKOVA, I.D.; POPLAVKO, Ye.M.

Rhenium mineral in copper-lead impregnation ores. Trudy Inst.  
met. no.15:41-42 '63. (MIRA 16:9)  
(Nonferrous metals--Analysis) (Rhenium--Analysis)

VISHNEVSKAYA, L.N.; ZAK, S.Sh.; POPLAVKO, Ye.M.

Rhenium-bearing lead-copper ores of the Dzhezkazgan deposit.  
Geol.rud.nestorozh. no.6-112-115 N-D '61. (MIRA 14:12)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut redkikh  
metallov, Moskva; 1 Chernometallurgicheskiy kombinat, g.  
Dzhezkazgan.

(Dzhezkazgan District--Ore deposits)

NEKRASOV, M.M.; POPLAVKO, Yu.M.

Seignetteoelectric properties of solid solutions in the ternary  
system  $\text{Ba}(\text{Ti}, \text{Zr}, \text{Sn})\text{O}_3$ . Fiz. tver. tela 2 no.8:1681-1684 Ag '60.  
(MIRA 13:8)

(Ferroelectric substances)

NEKRASOV, M.M., kand.tekhn.nauk; POPLAVKO, Yu.M.

Ferroelectric transducers. Avtom.i prib. no.1:59-62 Ja-Mr '63.  
(MIRA 16:3)

1. Kiyevskiy politekhnicheskii institut.  
(Transducers)

POPLAVKO, Yu.M.

Accurate measurement of the dielectric parameters of ferroelectric substances at superhigh frequencies. *Ukr. eksp. i teor. fiz.* 43 no.3:800-803 '62. (MIRA 15:10)

1. Kiyevskiy politekhnicheskoy insitut.  
(Dielectric constant) (Ferroelectric substances)

NEKRASOV, M. M.; POPLAVKO, Yu. M.

Microwave study of the dispersion of permittivity in barium titanate-type ferroelectrics. Izv. AN SSSR. Ser. fiz. 28 no. 4:714-716 Ap '64. (MIRA 17:5)

1. Kiyevskiy politekhnicheskii institut.

DIMAROVA, Ye.N.; POPLAVKO, Yu.M.

Heat conductivity of ceramic barium titanate and solid solutions  
on its basis. Izv. AN SSSR. Ser. fiz. 29 no.6:985-987 Je '65.  
(MIRA 18:6)



L 57567-65 EWT(1)/EPA(s)-2/EWT(m)/EWP(w)/EWA(d)/EEC(t)/I/EWP(t)/EWP(b)/EWA(c)  
 Pt-7 IJP(c) JD/GS  
 ACCESSION NR: AF5016135 UR/0048/65/029/006/0985/0987

AUTHOR: Dimarova, Ye.N.; Poplavko, Yu.M.

TITLE: Thermal conductivity of ceramic barium titanate and some barium titanate based solid solutions /Report, 4th All-Union Conference on Ferroelectricity held at Rostov-on-the-Don 12-18 Sept 1964/

SOURCE: AN SSSR. Izvestiya.Ser.fizicheskaya,v.29, no.6, 1965, 985-987

TOPIC TAGS: ferroelectric material, barium titanate, barium titanate based solid solution, heat conductivity, phase transition, exciton

ABSTRACT: The authors have measured the heat conductivity of barium titanate at temperatures from 20 to 450°C and the heat conductivities of solid solutions of barium zirconate, barium stannate, or both in barium titanate from 20 to 250°C. The measurements were made by a static absolute method that the authors and collaborators have described elsewhere (Fiz.tverdogo tela 4,163,1962; 6,2878,1964). The thermal conductivities had sharp maxima near the Curie points. The

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1-57567-65  
ACCESSION NR: AP5016135

full width at half-maximum of the heat conductivity peak ranged from about  $10^{\circ}$  to  $30^{\circ}$  for the different materials. The maxima were shifted by about  $20^{\circ}$  with respect to the Curie points. It is suggested that these shifts are related to the similar shift of the heat capacity maximum observed in barium titanate. At temperatures well below the Curie point the thermal conductivity decreased with increasing temperature; at temperatures well above the Curie point the thermal conductivity increased with increasing temperature. It is suggested that the increase of thermal conductivity with increasing temperature at high temperatures may be due to the participation of excitons in the heat conduction process. To account for the temperature dependence of the thermal conductivity of barium titanate above  $300^{\circ}\text{C}$  it is necessary to assume an activation energy of 0.8 eV for the excitons; this value is regarded as not unreasonable. The heat conductivities of  $\text{BaTi}_{1-x}\text{Sn}_x\text{O}_3$  solid solutions were found to decrease with increasing  $x$  for  $x$  between 0 and 0.4. It is concluded that this behavior is to be expected. It was found that application of an electric field (up to 6 kV/cm) increased the thermal conductivity of the solid solutions

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L 57567-65

ACCESSION NR: AP5016135

in the ferroelectric phase. This may be due to a decrease of the amplitude of titanium ion vibrations and a consequent decrease of the scattering of phonons by the ions, or it may be due to a decrease of the scattering of phonons by domains walls. The application of an electric field had little effect on the thermal conductivity in the transition region; sometimes the electric field caused the heat conductivity in this region to increase. Orig.art.has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: SS

NR REF SOV: 006

OTHER: 005

Card *3/3*

L 7816-66 EWT(1)/EWP(e)/EPA(s)-2/EWT(m)/EWP(1)/EPA(w)-2/EWP(t)/EWP(b)/EWA(h) IJP(c)

ACC NR: AP5028111 JD/GG/WH

SOURCE CODE: UR/0048/65/029/011/2020/2025

AUTHOR: Poplavko, Yu. M.

ORG: Kiev Polytechnic Institute (Kiyevskiy politekhnicheskii institut)

TITLE: Mechanism of microwave dispersion in barium titanate type ferroelectrics  
Report, Fourth All-Union Conference on Ferro-electricity held at Rostov-on-the Don  
12-16 September 1964

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 11, 1965, 2020-2025

TOPIC TAGS: ferroelectric crystal, barium titanate, electric domain structure, di-  
 electric constant, dielectric loss, dielectric dispersion, superhigh frequency,  
 electromagnetic wave scattering

ABSTRACT: The known facts concerning dielectric dispersion at microwave frequencies in barium titanate and similar ferroelectrics are reviewed and possible mechanisms are discussed. In order to obtain data that might assist in eliminating different hypotheses, the dielectric constants of 17 barium titanate type ferroelectrics were measured at  $10^3$  and  $10^{10}$  cycle/sec and the results are tabulated. The temperature variable dipole theory of W.P.Mason and V.T.Matthias (Phys. Rev., 74, 1622 (1948)) is discussed and rejected in a long footnote, and it is concluded that the microwave dispersion mechanism must involve the domain structure. The two current theories of microwave dispersion in barium titanate that involve the domain structure ascribe the

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table.

SUB CODE: SS, EM

SUBM DATE: 00/

ORIG. REF: 017 OTH REF: 025

APPROVED FOR RELEASE: 07/13/2001

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Card 2/2

POPLAVKO, Yu. M.

Ferroelectric properties of barium titanate in the UHF centimeter band. Fiz. tver. tela 4 no.4:1069-1071 Ap '62.  
(MIRA 15:10)

1. Kiyevskiy politekhnicheskii institut.

(Barium titanate crystals—Electric properties)  
(Ferroelectricity)

POPLAVKO, Yu.M.

Temperature characteristics of ferroelectric ceramics with  
controlled permeability at superhigh frequencies. Fiz. tvar.  
tela 4 no.9:2606-2608 S '62. (MIRA 15:9)

1. Kiyevskiy politekhnicheskii institut.  
(Ferroelectric substances--Thermal properties)

ACCESSION NR: AR4046015

S/0058/64/000/007/H035/H035

SOURCE: Ref. zh. Fizika, Abs. 7Zh244

AUTHORS: Nekrasov, M. N.; Poplavko, Yu. M.

TITLE: Investigation of nonlinear ceramic ferroelectric materials over a wide frequency range

CITED SOURCE: Izv. Kiyevsk. politekhn. in-ta, v. 40, 1962, 26-41

TOPIC TAGS: ferroelectric material, dielectric constant, ceramic dielectric, dielectric loss, domain structure, relaxation process

TRANSLATION: An experimental procedure is described, used in the investigation of nonlinear ferroelectrics (FE) in the range 0-- $10^{10}$  cps, and different methods of applying the control voltage are indicated. The influence of some technological factors on the dielectric properties of the FE at different frequencies is instigated.

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ACCESSION NR: AR4046015

The frequency dependences of the dielectric constant  $\epsilon$  and of the losses  $\tan\delta$  of ceramic FE in weak fields are considered. It is established that the dielectric constant of an FE of any composition decreases with the increasing frequency in the range  $0--10^{10}$  cps, and most sharply in the microwave region.  $\tan\delta$  usually has a minimum at frequencies  $10^4--10^5$  cps, and increases sharply with the frequency in the HF and in the microwave region, owing to the domain relaxation process. A fixed electric bias causes a decrease in  $\epsilon$  and  $\tan\delta$  at all frequencies. Depending on the electric field,  $\epsilon$  changes by 3--4 times away from the Curie point (by 30--40° lower) and is practically independent of the frequency up to the microwave region, where it decreases, but remains equal to 1.2--1.4 for several ferroelectrics. The frequency characteristics of the FE are greatly influenced by the technological regime, particularly the annealing temperature, and also the brand of the initial raw material.

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L 7004-65 EWT(m)/EFT(c)/ENP(j) Po-4/Pr-4 AS(mp)-2/AFWL/ASD(a)-5/SSD/AFMD(t)/  
ESD(gs)/ESD(dp)/ESD(t)/RAEM(t) RM

ACCESSION NR: AP4044977

S/0181/64/006/009/2878/2879

AUTHORS: Dimarova, Ye. N.; Poplavko, Yu. M.

TITLE: Temperature dependence of the thermal conductivity of  
triglycin sulfate

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2878-2879

TOPIC TAGS: triglycin sulfate, thermal conductivity, temperature  
dependence, ferroelectric material, single crystal, dielectric con-  
stant

ABSTRACT: An investigation was made of the temperature dependence of  
the coefficient of thermal conductivity of triclycin sulfate (TGS),  
in view of the interesting property of self-stabilization TGS, where-  
by the sample temperature is maintained constant automatically near  
the Curie point upon application of an electric voltage, and is  
practically independent of the ambient temperature. The thermal and

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L 7004-65

ACCESSION NR: AP4044977

electric measurements were made under identical conditions using the same Y-cut single crystal with both the electric field and the temperature gradient applied in the [010] direction. The dielectric properties were measured by a bridge method and the thermal conductivity by a method described earlier (A. I. Andriyevskiy, Ye. N. Dimarova, M. M. Pidorya, FTT v. 4, 163, 1962). The results are shown in Fig. 1 of the enclosure. The thermal conductivity of TGS decreases with increasing temperature, but more slowly than  $T^{-1}$ . There may be a slight maximum in the thermal conductivity at the Curie point, but it amounts to only 2--3%, i.e., practically within the limits of the experimental accuracy. This compares with about 16% for  $\text{BaTiO}_3$ . It is suggested that the self-stabilization of TGS is due not only to the sharp decrease in the losses near the Curie point, but also to the relatively low thermal conductivity. Orig. art. has: 1 figure.

ASSOCIATION: None

Card 2/4

L 7004-65

ACCESSION NR: AP4044977

SUBMITTED: 22Feb64

ENCL: 01

SUB CODE: SS, TD

NR REF SOV: 003

OTHER: 003

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I 7004-55

ACCESSION NR: AP4044977

ENCLOSURE: 01

0

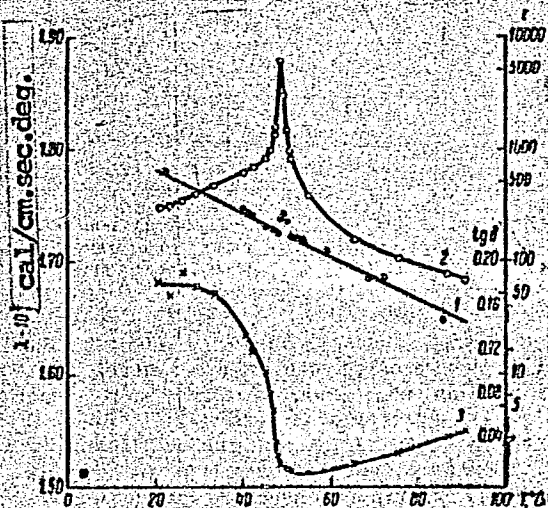


Fig. 1.  
Temperature dependence of the  
coefficient of thermal conductivity  
(1), the dielectric constant (2),  
and the loss-angle tangent (3) for  
triglycin sulfate

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ACCESSION NR: AR4046016

S/0058/64/000/007/H035/H035

SOURCE: Ref. zh. Fizika, Abs. 7Zh245

AUTHOR: Poplavko, Yu. M.

TITLE: Methods for the investigation of ceramic ferroelectric materials in the centimeter band

CITED SOURCE: Izv. Kiyevsk. politekhn. in-ta, v. 40, 1962, 42-58

TOPIC TAGS: ferroelectric material, ceramic dielectric, dielectric constant, dielectric loss, microwave component

TRANSLATION: A new method is proposed for measuring the parameters of dielectrics at centimeter wavelengths, based on the known method of measuring the input impedance of a short-circuited waveguide with a dielectric, and differing from the earlier one in the use of measuring-type dielectric transformers. The combination of this method

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ACCESSION NR: AR4046016

with the method of measuring attenuation makes it possible to determine quite accurately (error 1--2%) the dielectric constant and the tangent of the loss angle. To investigate the dependence of the dielectric constant on the voltage of the control field, a waveguide method is proposed, and a special sample construction is used to apply the control field simultaneously with microwave signal. An estimate is made of the measurement errors due to the air gaps between the samples and the waveguide walls. Bibliography, 16 titles.

SUB CODE: SS, MT

ENCL: 00

Card 2/2

ACCESSION NR: AP4030649

S/0048/64/028/004/0714/0716

AUTHOR: Nekrasov, M.M.; Poplavko, Yu.M.

TITLE: Investigation of the dispersion of the dielectric constant of barium titanate ferroelectrics in the microwave region Report, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May-5 June 1963

SOURCE: AN SSSR. Izv.. Ser. fiz., v.28, no.4, 1964, 714-716

TOPIC TAGS: ferroelectricity, dielectric dispersion, microwave dielectric dispersion, ferroelectric dielectric dispersion, barium titanate ceramic

ABSTRACT: The dielectric constant of barium titanate ceramics and related ferroelectric materials was measured at frequencies from 50 to  $1.6 \times 10^{10}$  cycles/sec. The high frequency measurements were performed by the following four methods: measurement of the input impedance of an "infinite" waveguide filled with the ferroelectric material; measurement of the input impedance of a short waveguide section filled with the material investigated; measurement of the wavelength in a ferroelectric plate, and the relation between the standing wave ratio and the thickness of the plate; measurement of the insertion loss of a thin plate in a waveguide as a func-

Card 1/3

ACCESSION NR: AP4030649

in solid solutions containing large concentrations of barium stannate or barium zirconate in barium titanate. Orig.art.has: 1 figure.

ASSOCIATION: Kiyevskiy politekhnicheskii institute (Kiev Polytechnic Institute)

SUBMITTED: 00

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: EM

NR REF SOV: 005

OTHER: 003

Card 3/3



POPLAVKO, Yu.M.

Use of a waveguide method for measuring the parameters of seignetoelctrics with regulated specific inductive capacitance. Izv. vys. ucheb. zav.; radiotekh. 6 no.1:83-86 Ja-F '63. (MIRA 16:3)

1. Rekomendovano kafedroy dielektrikov i poluprovodnikov Kiyevskogo ordena Lenina politekhnicheskogo instituta.  
(Ferroelectric substances--Measurement) (Microwaves)

S/142/63/006/001/010/015  
E192/E382

AUTHOR: Poplavko, Yu.M.

TITLE: Measurements of the parameters of ferroelectrics  
with controlled permittivity by the waveguide method

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika,  
v. 6, no. 1, 1963, 83 - 86

TEXT: The permittivity and losses of ferroelectrics and their dependence on the biasing voltage were measured by using an infinite waveguide with the test sample and determining its input impedance. A special construction was adopted to make it possible to apply simultaneously the microwaves and controlling or biasing voltage to the sample. The sample consisted of two equal sections separated by a thin silver electrode for applying the controlling voltage; the second electrode for the biasing voltage was the waveguide, which was grounded. It was found experimentally that the presence of such a silver electrode did not affect the microwave measurements. The measuring system consisted of a generator which was connected to the measuring waveguide with the sample by means of a decoupling attenuator and a measuring line;  
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Measurements of ....

S/142/63/006/001/010/015  
E192/E382

the sample was immediately preceded by a measuring transformer. The wave was partly reflected from the front face of the sample so that a standing wave was formed between the attenuator and the sample. It was possible to calculate the input impedance of the system by measuring the standing wave. The sample was followed by a matching transformer, an impedance transformer and a matched load. This matching simulated the infinite length of the sample. Thus, an impedance  $Z_2$  could be determined, which represented the wave impedance of the waveguide with the dielectric sample. The permittivity  $\epsilon'$  and loss tangents  $\tan \delta$  of barium titanate were measured by this method as a function of the electric-field biasing the sample. The results are shown in Fig. 3. The error in the measurement of the permittivity was 5 - 10% and that of the loss tangent was about 20%. These errors are primarily due to the constructional deficiencies in the transformer and the sample, imperfections in their contacts and the errors in the measuring line. The errors of measurement can be reduced by improving the sample and, in particular, by ensuring that its surfaces are parallel with each other to within 0.02 mm; also, the gap between

Card 2/3

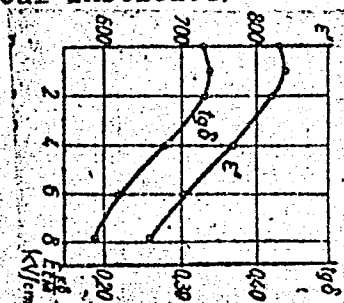
Measurements of ....

S/142/63/006/001/010/015  
E192/E382

the sample and the waveguide should be as small as possible. A measurement system of this type can be employed as a phase-shifter or an amplitude-modulator since absorption of the microwave signal passing through the waveguide with the sample depends on the biasing voltage applied to it. Amplitude-modulation of up to 40% could be obtained. There are 4 figures.

ASSOCIATION: Kafedra dielektrikov i poluprovodnikov Kiyevskogo ordena Lenina politekhnicheskogo instituta  
(Department of Dielectrics and Semiconductors of Kiyev Order of Lenin Polytechnical Institute)

SUBMITTED: February 24, 1962 (initially)  
July 7, 1962 (after revision)



Card 3/3

Fig. 3: